

Claims

1. A rotor for high-speed operation, characterized by at least one rotor segment (7) provided at a hub (1) and with at least one closed cutout (6) that reduces stress that appears when operating the rotor.

2. A rotor according to claim 1 wherein the segment has at least two closed cutouts such that the material enclosing the cutouts is present in the form of three spokes (5).

3. A rotor according to claims 1 to 2 wherein the closed cutout has a continuous circumferential line.

4. A rotor according to any of claims 1 to 3 wherein the rotor segment (7) has mirror symmetry, and the axis of symmetry goes through the hub (1).

5. A rotor according to any of claims 1 to 4 wherein the spokes (5) of a rotor segment (7) are provided in a largely parallel fashion.

6. A rotor according to any of claims 1 to 5 wherein the rotor segment (7) is formed at its outer end as a segment of a circle.

7. A rotor according to any of claims 1 to 6, with at least three rotor segments (7).

8. A rotor according to any of claims 1 to 7 wherein the rotor segments (7) are provided in an evenly distributed manner 5 around the hub (1).

9. A rotor according to any of claims 1 to 8 wherein the rotor segments (7) are identical to one another.

10. A rotor according to any of claims 1 to 9 wherein the rotor segments (7) are formed with a stress-optimized radial thickness profile. 10

11. A rotor according to any of claims 1 to 10 with a radius of action exceeding 500 mm, especially 1000 mm.

12. A rotor according to any of claims 1 to 11 with rotor segments (7) comprising metal, ceramics, glass or composite materials. 15

13. A rotor according to any of claims 1 to 12 suitable for circumferential speeds exceeding 300 m/s, especially exceeding 400 m/s.

14. Application of a rotor according to any of claims 1 to 13 for incorporation of at least one active element. 20

15. Application according to claim 14 as a chopper disk for incorporation of at least one graphite crystal for a backscatter spectrometer.

New claims

1. A rotor for high-speed operation and optimized with respect to centrifugal forces (effective radius and rotation speed) and stress limits of its material, characterized in by at least one 5 rotor segment (7) that is part of a solid disk and that extends from a hub (1) to the work circle (2), the rotor having a discontinuous rim and the rotor segment (7) having at least one closed cutout (6) for reducing stresses encountered during use of the rotor, the geometry of the cutout (6) being basically circular 10 and having a smoothly continuous edge line.

2. A rotor according to claim 1 wherein the segment has at least two closed cutouts such that the material enclosing the cutouts is present in the form of three spokes (5).

3. A rotor according to claims 1 to 2 wherein the rotor 15 segment (7) has mirror symmetry, and the axis of symmetry goes through the hub (1).

4. A rotor according to any of claims 1 to 3 wherein the spokes (5) of a rotor segment (7) are provided in a largely parallel fashion.

5. A rotor according to any of claims 1 to 4 wherein the rotor segment (7) is shaped at its outer end as a segment of a circle.

6. A rotor according to any of claims 1 to 5, with at 5 least three rotor segments (7).

7. A rotor according to any of claims 1 to 6 wherein the rotor segments (7) are provided in an evenly distributed manner around the hub (1).

8. A rotor according to any of claims 1 to 7 wherein the 10 rotor segments (7) are identical to one another.

9. A rotor according to any of claims 1 to 8 wherein the rotor segments (7) are formed with a stress-optimized radial thickness profile.

10. A rotor according to any of claims 1 to 9 with an 15 effective radius exceeding 500 mm, especially 1000 mm.

11. A rotor according to any of claims 1 to 10 with rotor segments (7) are made of metal, ceramic, glass or composite material.

12. A rotor according to any of claims 1 to 11 suitable for circumferential speeds exceeding 300 m/s, especially exceeding 400 m/s.

13. Application of a rotor according to any of claims 1
5 to 12 for incorporation of at least one active element.

14. Application according to claim 13 as a chopper disk for incorporation of at least one graphite crystal for a backscatter spectrometer.